Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of synthesizing uniform nanorods of metals, alloys, metal oxides, metal nitrides, metal phosphides, and metal ~~sulfides~~ chalcogenides, comprising the steps of:

reacting a metal precursor and a first surfactant in a first solvent to form a metal-first surfactant complex solution;

injecting said metal-first surfactant complex solution into a second solution comprising a second solvent, a second surfactant and a reagent at high temperature using a syringe pump at a controlled injection rate to form a reaction mixture;

forming the nanorods by reacting the reaction mixture, wherein the reacting further comprises ~~allowing one or more of~~ thermal decomposition, reduction, oxidation, sulfidation ~~or~~ and phosphidation ~~of said reaction mixture to form said nanorods~~;

separating and precipitating said nanorods in the ~~reacted~~ reaction mixture by adding a poor solvent; and

retrieving said nanorods by centrifuging.

2. (Previously Presented) The method of claim 1, wherein said metal precursor is selected from the group consisting of (a) organometallic compounds, (b) metal acetylacetonate compounds, and (c) metal alkoxide compounds.

3. (Currently Amended) The method of claim 1, wherein said metal precursors comprise metals selected from the group consisting of iron [Fe], cobalt [Co], nickel [Ni], chromium [Cr], manganese [Mn], barium [Ba], strontium [Sr], titanium [Ti], zirconium [Zr], platinum [Pt], palladium [Pd] and the metals in groups II through X of the periodic table of elements ~~metals~~.

4. (Currently Amended) The method of claim 1, wherein the metal precursors comprise ligands ~~associated with said precursors are~~ selected from the group consisting of carbonyl [CO], nitrosyl [NO], cyclopentadienyl [C_5H_5], acetate, aromatic compounds and alkoxides.

5. (Currently Amended) The method of claim 1, wherein said metal precursors comprise metal salts ~~used as precursors~~,

the metal salts being ~~are~~ selected from the group consisting of iron(III) chloride [$FeCl_3$], iron(II) chloride [$FeCl_2$], iron(II) sulfate [$FeSO_4$], iron(III) nitrate [$Fe(NO_3)_3$], cobalt(III) chloride [$COCl_3$], cobalt(II) chloride [$COCl_2$], cobalt(III) nitrate [$Co(NO_3)_3$], nickel(II) sulfate [$NiSO_4$], nickel(II) chloride [$NiCl_2$], nickel(II) nitrate [$Ni(NO_3)_2$], titanium tetrachloride [$TiCl_4$], zirconium tetrachloride [$ZrCl_4$], hydrogen hexachloroplatinate(IV) [H_2PtCl_6], hydrogen hexachloropalladiate(IV) [H_2PdCl_6], barium chloride [$BaCl_2$],

barium sulfate [$BaSO_4$], strontium chloride [$SrCl_2$] and strontium sulfate [$SrSO_4$], ~~whereby these~~

wherein the metal salts comprise ~~are~~ metals ~~selected from the group consisting of iron [Fe], cobalt [Co], nickel [Ni], chromium [Cr], manganese [Mn], barium [Ba], strontium [Sr], titanium [Ti], zirconium [Zr], platinum [Pt], palladium [Pd],~~ and either anions ~~selected from the group consisting of chloride [Cl^-], nitrate [NO_3^-], sulfate [SO_4^{2-}], and phosphate [PO_4^{3-}] and~~ or alkoxides.

6. (Currently Amended) The method of claim 1, wherein the metal precursors employed in the synthesis of said nanorods of alloys and multi-metallic oxides are two or more metal precursors selected from ~~the~~ the group consisting of (a) organometallic compounds selected from the group consisting of iron pentacarbonyl [$Fe(CO)_5$], ferrocene, cobalt tricarbonylnitrosyl [$Co(CO)_3(NO)$], dicobalt octacarbonyl [$CO_2(CO)_8$], chromium hexacarbonyl [$Cr(CO)_6$], nickel tetracarbonyl [$Ni(CO)_4$] and dimanganese decacarbonyl [$Mn_2(CO)_{10}$]; (b) metal acetylacetonate compounds selected from the group consisting of iron acetylacetonate [$Fe(acac)_3$], cobalt acetylacetonate [$Co(acac)_3$], barium acetylacetonate [$Ba(acac)_2$], strontium acetylacetonate [$Sr(acac)_2$], platinum acetylacetonate [$Pt(acac)_2$] and palladium acetylacetonate [$Pd(acac)_2$]; and (c) metal alkoxide compounds selected from the group consisting of titanium tetraisopropoxide [$Ti(^iOC_3H_7)4$] and zirconium tetrabutoxide [$Zr(OC_4H_9)_4$].

7. (Previously Presented) The method of claim 1, wherein said first and second surfactant are selected from the group consisting of (a) cationic surfactants, (b) neutral surfactants, and (c) anionic surfactants, and mixtures thereof.

8. (Previously Presented) The method of claim 1, wherein said first and second solvents are selected from the group consisting of (a) ethers, (b) heterocyclic compounds, (c) aromatic compounds, (d) dimethyl sulfoxide (DMSO) and dimethylformamide (DMF), (e) alcohols, (f) hydrocarbons, and (g) water.

9. (Currently Amended) The method of claim 1, wherein said metal-first complex solution is formed at a temperature between 20°C. and 200°C.

10. (Currently Amended) The method of claim 1, wherein the molar ratio of said metal precursor to said first surfactant in the metal-first surfactant complex solution is in the range between 1:0.1 and 1:100.

11. (Currently Amended) The method of claim 1, wherein for synthesizing nanorods of metal ~~sulfides~~ chalcogenides said reagent is selected from the group consisting of elemental sulfur (S_8), selenium (Se), tellurium (Te), trioctylphosphine selenide (TOPSe), trioctylphosphine sulfide (TOPS) and trioctylphosphine telluride (TOPTe).

12. (Previously Presented) The method of claim 1, wherein for synthesizing nanorods of metal oxides said reagent comprises an oxidant selected from the group consisting of oxygen (O_2), hydrogen peroxide (H_2O_2), and amine N-oxide.

13. (Previously Presented) The method of claim 1, wherein for synthesizing metal nanorods said reagent comprises a reducing agent selected from the group consisting of sodium borohydride ($NaBH_4$), lithium aluminum hydride ($LiAlH_4$), lithium triethylborohydride (super-hydride, $LiB(C_2H_5)_3H$), tetramethylammonium borohydride ($(CH_3)_4NBH_4$) and hydrogen gas.

14. (Currently Amended) The method of claim 1, wherein said ~~metal-surfactant~~ metal-first surfactant complex solution is injected into the second solution at a temperature between 0°C. and 400°C.

15. (Currently Amended) The method of claim 1, wherein said ~~metal-surfactant~~ metal-first surfactant complex solution is injected into a solution using a syringe pump at an injection rate between 1 mL/hr and 100 mL/hr.

16. (Previously Presented) The method of claim 1, wherein said thermally decomposing, reducing, oxidating, sulfidating and/or phosphidating of the reaction mixture is carried out at a temperature between 0°C. and 400°C. C.

17. (Previously Presented) The method of claim 1, wherein thermally decomposing, reducing, oxidating, sulfidating and/or phosphidating of the reaction mixture to form the

nanorods is conducted for a time period of between 1 minute and 72 hours.

18. (Currently Amended) The method of claim 7, wherein the cationic surfactants are alkyltrimethylammonium halides; the neutral surfactants are selected from the group consisting of oleic acid, trioctylphosphine oxide (TOPO), triphenylphosphine (TPP) ~~(YPP)~~, trioctylphosphine (TOP), alkyl amines of the chemical formula RNH_2, wherein R is (C_3-C_{18}) ~~(C_2-C_{18})~~ alkyl selected from oleylamine, octylamine, hexadecylamine, trialkylamine and alkyl thiols; and the anionic surfactants are selected from the group consisting of sodium alkyl sulfates and sodium alkyl phosphates.

19. (Previously Presented) The method of claim 18, wherein the alkyltrimethylammonium halides comprise cetyl trymethylammoniumn bromide.

20. (Previously Presented) The method of claim 8, wherein the ethers are selected from the group consisting of octyl ether, butyl ether, hexyl ether and decyl ether; the heterocyclic compounds are selected from the group consisting of pyridine and tetrahydrofurane (THF); the aromatic compounds are selected from the group consisting of toluene, xylene, mesitylene, and benzene; the alcohols are selected from the group consisting of octyl alcohol and decanol; and the hydrocarbons are selected from the group consisting of heptane, octane, decane, dodecane, tetradecane and hexadecane.

21. (Currently Amended) The method of claim 2, wherein the organometallic ~~metallic~~ compounds are selected from the group consisting of iron pentacarbonyl [$Fe(CO)_5$], ferrocene, cobalt tricarbonylnitrosyl [$Co(CO)_3(NO)$], dicobalt octacarbonyl [Co2$(CO)_8$], chromium hexacarbonyl [$Cr(CO)_6$], nickel tetracarbonyl [$Ni(CO)_4$] and dimanganese decacarbonyl [$Mn_2(CO)_{10}$]; the metal acetylacetonate compounds are selected from the group consisting of iron acetylacetonate [$Fe(acac)_3$], cobalt acetylacetonate [$Co(acac)_3$], barium acetylacetonate [$Ba(acac)_2$], strontium acetylacetonate [$Sr(acac)_2$], platinum acetylacetonate [$Pt(acac)_2$] and Palladium acetylacetonate [$Pa(acac)_2$]; and the metal alkoxide compounds ~~alkoxides~~ are selected from the group consisting of titanium tetraisopropoxide [Ti(OC3H7)$_4$] and zirconium tetrabutoxide [$Zr(OC_4H_9)_4$].

22. (Currently Amended) The method of claim 12, wherein the ~~oxidant~~ amine N-oxide is ~~selected from the group consisting of~~ pyridine N-oxide ~~and~~ or trimethylamine N-oxide.

23. (New) The method of claim 5, wherein metals are selected from the group consisting of iron [Fe], cobalt [Co], nickel [Ni], chromium [Cr], manganese [Mn], barium [Ba], strontium [Sr], titanium [Ti], zirconium [Zr], platinum [Pt], and palladium [Pd].

24. (New) The method of claim 5, wherein the metal salts comprise metals and anions, wherein the anions are selected from the group consisting of chloride [Cl^-], nitrate [NO_3^-], sulfate [SO_4^{2-}], and phosphate [PO_4^{3-}].